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WILLIAMS, MORGAN & AMERSON, P.C.  
10333 RICHMOND, SUITE 1100  
HOUSTON, TX 77042

EXAMINER

SCHILLINGER, LAURA M

ART UNIT PAPER NUMBER

2813

DATE MAILED: 06/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Applicant(s)

10/023,347

Applicant(s)

HAUSE ET AL.

Examiner

Laura M Schillinger

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) 13-43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

**This Office Action is in response to the Election made in Paper No.5, dated 5/8/03.**

#### ***Election/Restrictions***

Claims 13-43 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected claims, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 5.

Applicant's election with traverse of claims 1-12 in Paper No. 5 is acknowledged. The traversal is on the ground(s) that the scope of the non-elected claims are merely narrower than those of the elected claims. This is not found persuasive because the non-elected claims are patentably distinct from those of the claims 1-12, consequently, prior art used to reject claims 1-12 may not read upon the remaining non-elected claims and therefore are distinct species.

The requirement is still deemed proper and is therefore made FINAL.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Jang et al ('137).

In reference to claim 1, Jang teaches a method comprising:

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Providing a wafer comprised of a bulk substrate (Fig.4 (10)), an insulating layer positioned above the bulk substrate (Fig.4 (42)), and a semiconducting layer positioned above the insulating layer (Fig.4 (44));

Forming an opening in the semiconductor layer and the insulating layer to thereby expose a surface area of the substrate (Fig.4 (48)); and

Forming an alignment mark in the substrate within the exposed surface area of the substrate (Fig.4 (30)); and

Forming a layer of material above the alignment mark in the opening (Col.3 ,lines: 30-40).

In reference to claim 2, Jang teaches wherein the wafer is comprised of silicon, and the semiconducting layer is comprised of silicon (Col.3, lines: 25-40).

In reference to claim 4, Jang teaches wherein forming the opening comprises at least one etching process (Col.3, lines: 35-40).

In reference to claim 5, Jang teaches wherein forming the alignment mark comprises:

Forming a patterned layer of photoresist above the exposed substrate area (Col.3, lines: 35-40); and

Performing at least one etching process to form the alignment mark in the exposed area using the photoresist as a mask (Col.3, lines: 35-40).

In reference to claim 6, Jang teaches wherein forming a layer of material above the alignment mark comprises depositing a layer above the alignment mark and in the opening (Col.3, lines: 33-40).

In reference to claim 7, Jang teaches wherein the material comprises at least one of silicon nitride and a material having a dielectric constant less than 8.0 (Col.3, lines:33-40).

In reference to claim 8, Jang teaches further comprising performing a planarization operation after forming the material above the alignment mark (Col.3, lines: 40-45).

In reference to claim 9, Jang teaches further comprising:

Positioning the wafer in a photolithography stepper tool (Col.1, lines:40-45 and Col.7, lines: 15-20);

Reflecting a light off the alignment mark formed in the substrate to properly position the wafer for processing in the stepper tool (Col.1, lines: 40-45).

In reference to claim 10, Jang teaches wherein forming the opening comprises forming a plurality of openings in the semiconducting layer and the insulating layer (Fig.4 (48)).

In reference to claim 11, Jang teaches wherein forming the alignment mark comprises forming an alignment mark in the substrate within the exposed area of each opening (Fig.5(48)).

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In reference to claim 12, Jang teaches wherein forming the alignment mark comprised a plurality of grating structures in the substrate (Fig.4 (30)).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jang ('137) as applied to claims above, and further in view of Ridinger ('219).

In reference to claim 3, Jang teaches the above method however fails to explicitly teach wherein the wafer has a diameter of 4, 8, or 12 inches. However, Ridinger teaches a wafer having a diameter in a range of 3 to 6 inches (Col.4, lines: 47-53). It would have been obvious to one of ordinary skill in the art to modify Jang's teachings to include a 4 inch semiconductor wafer as taught by Ridinger because Ridinger teaches that wafers with diameters between 3 and 6 inches are considered "standard" (Col.4, lines: 47-53).

### ***Conclusion***

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura M Schillinger whose telephone number is (703) 308-6425.

The examiner can normally be reached on M-T, R-F 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W Whitehead, Jr. can be reached on (703) 308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

LMS  
June 13, 2003

  
CARL WHITEHEAD, JR.  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800